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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/737,343

12/16/2003

Shrenik Deliwala

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7984

7590

10/19/2004

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EXAMINER

DICKEY, THOMAS L

ART UNIT

PAPER NUMBER

2826

DATE MAILED: 10/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/737,343	<b>Applicant(s)</b> DELIWALA ET AL.	
	<b>Examiner</b> Thomas L Dickey	<b>Art Unit</b> 2826	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 07 March 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 12,15,16,18,20,29-32 and 37-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12,15,20,30-32 and 38 is/are rejected.
- 7) ☐ Claim(s) 16,18,29,37 and 39-42 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **DETAILED ACTION**

**1. Preliminary amendments noted:**

**A.** The preliminary amendment filed on 12/16/03 has been entered.

**B.** A second preliminary amendment filed 12/16/03 has been entered. In their remarks accompanying this second preliminary amendment, applicants state that it is filed as part of a continuation-in-part. Applicants further state that this second preliminary amendment is filed in response to a 10/17/03 rejection in the parent application, wherein the examiner identified changes to pages 129-130 as presenting "new matter" to the parent case. Said changes are presented in the second preliminary amendment.

**C.** A third preliminary amendment, filed 03/07/04, has been entered. This third amendment makes no changes to the claims.

### ***Oath/Declaration***

**2.** The oath/declaration filed on 12/16/03 is acceptable.

### ***Drawings***

**3.** The drawings are objected to as follows:

**A.** The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "6906b" has been used to designate both "a gap region" (according to the paragraph beginning at line 19 of page 129) and an "evanescent coupling region"

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(according to the paragraph beginning at line 6 of page 130). The drawings are further objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "7312" has been used to designate both "a plurality of gratings" (according to the paragraph beginning at line 7 of page 132 and figure 73) and what appears to be, in figure 74, either a substrate or a waveguide similar to the waveguide designated "7310" in figure 73. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

**B.** The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: "3008" (at page 68 line 9). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per

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37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

C. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: "160" (figure 5) and "203" (figures 83-85). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

#### ***Information Disclosure Statement***

4. If applicant is aware of any relevant prior art, he/she requested to cite it on form **PTO-1449** in accordance with the guidelines set forth in M.P.E.P. 609.

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***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 38 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 38 recites the limitation "the relatively narrow waveguide" in line 15. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 12,15,20,30-32, and 37 are rejected under 35 U.S.C. § 102(b) as being anticipated by NOBLE (5,987,196).

Noble discloses a hybrid active electronic and optical circuit integrated within a Silicon-On-Insulator (SOI) wafer, the SOI wafer including an insulator layer 90 and an upper silicon layer 88 (part 124 in alternate cross-sectional figure 21) the hybrid active electronic and optical circuit comprising: a relatively narrow waveguide 72 (marked "98"

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in plan view figure 12) located within the upper silicon layer 88 of the SOI wafer for supporting the propagation of light, a light deflector 80 at least partially located in the upper silicon layer 88, the light deflector 80 is configured to deflect light impinging at the suitable incident angle to a suitable mode angle wherein light deflected by the light deflector 80 enters the waveguide 72, an active electronic circuit 82-86 including a diode 82, MOSFET transistor 84, and multiplexer 136, positioned proximate the waveguide 72, wherein a flow of light through the waveguide 72 can be altered depending on a property of the active electronic circuit 84; an evanescent coupling region at least partially located within the upper silicon layer 88, the evanescent coupling region including a gap region including a substantially constant thickness portion (Noble refers to the gap region as an "optical pathway disposed in layer 90 to allow optical communication," note column 6 line 64) having a thickness of  $0.5\ \mu\text{m}$  (the gap being no thicker than insulator 90) positioned between the light deflector 80 and the relatively narrow waveguide 72 for optically coupling the deflected light into the waveguide 72 such that light emitted from the light deflector 80 can pass via the evanescent coupling gap region to the waveguide 72 at a suitable mode angle. Noble further discloses a thickness of the upper silicon layer 124 that is .5 microns (note column 9 line 33) and thus less than 3 microns, and a width of the relatively narrow waveguide 98 that is approximately 3 microns (note column 7 line 38). Note figures 9-22 and column 6 line 51 through column 10 line 35 of Noble.

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***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

A. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over MAGEL (5,502,779) in view of TIEN (3,617,109).

Magel discloses a hybrid active electronic and optical circuit integrated within a wafer, the wafer including an insulator layer 16 and an upper silicon layer 18-20, the hybrid active electronic and optical circuit comprising a waveguide 18 located within the upper silicon layer 18-20 of the SOI wafer for supporting the propagation of light, an active electronic circuit 14-27-29 positioned proximate the waveguide 18, wherein a flow of light through the waveguide 18 can be altered depending on a property of the active electronic circuit 14-27-29; a light deflector 22-24 at least partially located in the upper silicon layer 18-20, the light deflector 22-24 configured to deflect light impinging at the suitable incident angle to a suitable mode angle  $\theta_M$  wherein light deflected by the light deflector 22-24 enters the waveguide 18, and a coupling region (proximate light deflectors 22 and 24) at least partially located within the upper silicon layer 18-20, such that light emitted from the light deflector 22-24 can pass via the coupling region to the waveguide at a suitable incident angle. Note figures 1a,1b,2a-2c, and column 3 lines 3-



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64 of Magel. Magel does not disclose that the coupling region is an evanescent coupling region including a gap region positioned between the light deflector and the waveguide for optically coupling the deflected light into the waveguide, such that light emitted from the light deflector can pass via the gap region. However, Tien discloses a hybrid active electronic and optical circuit with an evanescent coupling region including a gap region 15 positioned between a light deflector 14 and a waveguide 11 for optically coupling the deflected light into the waveguide 11, such that light emitted from the light deflector 14 can pass via the gap region 15. Note figure 1 of Tien. Therefore, it would have been obvious to a person having skill in the art to augment Magel's hybrid active electronic and optical circuit with the evanescent coupling region including a gap region positioned between a light deflector and a waveguide for optically coupling the deflected light into the waveguide, such that light emitted from the light deflector can pass via the gap region such as taught by Tien in order to activate only certain modes (indicated in Tien's figure 1 as "m1") to thus provide a utilization circuit (such as that indicated in Tien's figure 1 as element 13) with particular mode excitation.

***Allowable Subject Matter***

8. Claims 16,18,29, and 39-42 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

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***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thomas L Dickey whose telephone number is 571-272-1913. The examiner can normally be reached on Monday-Thursday 8-6.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan J Flynn can be reached on 571-272-1915. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**TLD**  
**10/04**

  
**Minhloan Tran**  
**Primary Examiner**  
**Art Unit 2826**